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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,199

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Toshiaki Kakutani

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MARTINE PENILLA & GENCARELLA, LLP
710 LAKEWAY DRIVE
SUITE 200
SUNNYVALE, CA 94085

EXAMINER

WILLS, LAWRENCE E

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/551,199	Applicant(s) KAKUTANI, TOSHIAKI	
	Examiner LAWRENCE E. WILLS	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-6,8,20-22,24-26,28,30,31 and 33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8,20-22,24-26,28,30,31 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 24, 2010 has been entered.

Response to Arguments

2. Applicant's arguments filed November 24, 2010 have been fully considered but they are not persuasive. The applicant argues on pages 11 and 12 of remarks

a. "In view of the foregoing, Applicant respectfully submits that the phrase "the number of which is greater than the number of the pixels included in each of the pixel groups" is sufficiently clear to enable one having ordinary skill in the art to determine the boundaries of what constitutes infringement of the claims. See MPEP § 2173. Accordingly, Applicant submits that claims 1, 2, 4-6, 8, 20-22, 24-26, 28, 30, 31, and 33 satisfy the definiteness requirement of 35 U.S.C. § 112, second paragraph, and requests that the rejection of these claims there under be withdrawn."

However, it is still unclear to the examiner how to interpret “the number of which is greater than the threshold values”. It is unclear if “the number of which” is referring to threshold values, pixels, or dots per pixel group.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2, 4-6, 8, 20-22, 24-26, 28, 30, 31, and 33 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 2, 4-6, 8, 20-22, 24-26, 28, 30, 31, and 33 read “the dither matrices comprises a plurality of threshold values selected from among various types of threshold values, the number of which is greater than the number of the pixels included in each of the pixel groups, and maps the plurality of threshold values in a two-dimensional array.” Specifically “the number of which is greater than the number of the pixels included in each of the pixel groups” is unclear.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 4-6, 8, 20-22, 24-26, 28, 30, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US Patent No. 5359430) in view of Troxel (US Patent No. 5124803).

Regarding claims 1, 5, 20, 22, 24-26, 28, 30, 31, and 33, Zhang'430 teaches an image output control system (digital image processing system, 7, Fig. 1) comprising an image processing device (image processor, 9, Fig. 1) that makes image data subjected to a preset series of image processing (the steps of Fig. 2A) and an image output device (receiver, 21, Fig. 1) that creates dots according to a result of the preset series of image processing to output an image (the steps of Fig. 10), said image processing device comprising: a dot number specification module (comparator, 11, Fig. 1) that specifies a number of dots to be created in each of the pixel groups, said number of dots being specified based on a result of comparison between a tone value of each of the pixels constituting each of the pixel groups and a corresponding threshold

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value mapped in each of dither matrices, which is provided to each of the pixel groups (threshold screening involves comparing the pixel values of blocks of the contone image with cell values of a threshold array and turning on pixels based on if pixel values are greater than or equal to the cell value of the threshold abstract); a number data supply module (memory storing each count value for the multiple blocks in the image, column 4, line 8-10) that supplies dot number data representing the number of dots specified with regard to each pixel group to said image output device (block counts are received from memory in step 132, Fig. 10, column 6, lines 33-35), said image output device (receiver, 21, Fig. 10) comprising: a number data receiving module (decompressor, 23, Fig. 10) that receives the dot number data with regard to each pixel group (Step 132, Fig.10); a priority order selection module that selects a priority order of pixels for dot formation in each pixel group (module in the receiver gets the gray patterns corresponding to block counts, 136, Fig. 10); a pixel position determination module (image controller, 25, Fig. 10) that determines position of each dot-on pixel included in each pixel group, based on the received dot number data and the selected priority order (using the block counts that are received, the image controller recreates the second halftone image, column 6, lines 37- 38); and a dot formation module (output system, 29, Fig. 10) that actually creates a dot at the determined position of each dot-on pixel (step 140, Fig. 10) but fails to expressly teach a pixel group generation module that sequentially extracts, from the image, a plurality of pixel groups,

each of the pixel groups comprising a predetermined number of pixels selected from among pixels constituting the image and a dot number specification module wherein each of the dither matrices comprises a plurality of threshold values selected from among various types of threshold values, the number of which is greater than the number of the pixels included in each of the pixel groups, and maps the plurality of threshold values in a two-dimensional array.

Troxel'803 teaches a pixel group generation module (processor generating halftone screen tile shown in Fig. 4) that sequentially extracts, from the image, (automated method for generating the angled digital halftone screen tiles, column 6, lines 35-37) a plurality of pixel groups (notice fully the Fig. 10A showing an entire image divided into groups), each of the pixel groups comprising a predetermined number of pixels (each halftone screen tile contains a predetermined number of pixels column 6, lines 35-40) selected from among pixels constituting the image (the divided screen dots are made whole when the screen tiles are combined to form a complete halftone screen column 12, lines 20-25) and wherein each of the dither matrices 80 Fig. 9b comprises a plurality of threshold values selected from among various types of threshold values (dither threshold values shown as integers 1-16 in Fig. 9b), the number of which is greater than the number of the pixels included in each of the pixel groups (the numbers in the threshold are 1-16 are greater than the numbers of the pixel groups going from 0-7) and maps the plurality of

threshold values in a two-dimensional array (threshold array column 12, line 33).

Hence the prior art includes each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference. In combination Zhang'430 performs the same function as it does separately of converting contone images into halftone images. Troxel'803 performs the same function as it does separately of pixel group generation.

Therefore on of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately. The results of the combination would have been predictable and resulted in modifying the invent of Zhang'430 to include pixel group generation as disclosed by Troxel'803 thereby allowing assignment of pixels to screen dots to minimize moiré patterning (Troxel'803 column 3, lines 29-33)

Regarding claims 2 and 6, Zhang'430 teaches wherein said priority order selection module selects one priority order for each pixel group, among multiple

priority orders prepared in advance (Fig. 4a-4q, shows the prepared priority orders).

Regarding claims 4, 21, and 25, Zhang'430 teaches wherein said priority order selection module divides the dither matrix referred to for the dot number specification into multiple groups corresponding to multiple pixel groups (arrays column 3, lines 13-16), specifies a priority order of pixels in each pixel group based on a result of comparison between the image data of respective pixels included in the pixel group and corresponding threshold values (column 4, lines 5-10), and stores the specified priority orders of the multiple pixel groups as the multiple priority orders, said priority order selection module selecting one priority order corresponding to a position of each pixel group in the image, among the multiple priority orders based on the dither matrix (notice each gray pattern of the set 50 is a 4x4 array having a unique number of pixels illuminated, column 3, lines 27-30).

Regarding claim 8, Zhang'430 teaches wherein said number data receiving module receives the dot number data in each pixel group of plural pixels that are adjacent to one another and have a preset positional relation (as in Fig. 5).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAWRENCE E. WILLS whose telephone number is (571)270-3145. The examiner can normally be reached on Monday-Friday 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

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December 18, 2010